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Comparison of two surveys of head injured patients presenting during a calendar year to an urban medical centre 32 years apart

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Original Article

Comparison of Two Surveys of Head Injured Patients presenting during a Calendar Year to an Urban Medical Centre 32 Years Apart

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Abstract

Objective: To study the patients presenting with head injuries to a tertiary hospital in Karachi during the year 2003.

Methods: During the calendar year 2003, a cross-sectional study was conducted of all patients presenting to the casualty department of Jinnah Postgraduate Medical Centre (JPMC) with head injury. Personal information was collected from the patient's attendants at presentation or later if the patient had been brought in by the emergency services as an unknown person. The circumstances of the injury were similarly established and the clinical features documented.

Results: During the year 2003, a total of 3008 patients reported to the emergency room of JPMC. Of these 67% were males and the majority of the reporting patients (48%) had suffered their head injury in falls from a height. However, when considering the seriously injured patients warranting admission to the neurosurgery unit, road traffic injuries predominated (54%) and the age distribution was weighed towards an older age group with 70% being above the age of 20 years and mainly in the economically active 4th decade of life. One hundred and fifty four patients died for a mortality rate of 5% in the entire series of 3008 patients and 25% of the 623 admitted patients.

Conclusion: The experience of head injuries reporting to our centre in two calendar years, 33 years apart, suggests that this attention to the crisis of death and disability occurring on roads is necessary (JPMA 55;530:2005).

Introduction

Head Injury is an increasingly important public health issue in the developing world.[1] Due to poor record keeping and significant under-reporting, the magnitude of the problem does not receive sufficient recognition by health policy planners or indeed as an imperative to the development of preventative strategies.[2] Recent reviews of accidental injuries suggest that the low-income countries are subject to disproportionate increases in traffic related injuries. To gauge the increment of head injuries in an urban population in the developing world, we have conducted a survey of all patients presenting with head injury to a tertiary hospital in Karachi during a calendar year (2003) and compared this to a similar survey conducted in the same Centre in 1970.

Patients and Methods

During the calendar year 2003, a cross-sectional study was conducted on all patients presenting to the Emergency Department of Jinnah Postgraduate Medical Centre (JPMC) with traumatic head injury. Information was collected on a proforma designed for the purpose. Personal information was collected from the patient's attendants at presentation or later if the patient was brought in by emergency services as an unknown person. The circumstances of the injury were similarly established and clinical features documented. Details of the post-hospitalization course of

the admitted patients were retrieved from the hospital records.

Results

During the year 2003, a total of 3008 patients reported with head injury to the emergency room of JPMC. There were 1865 males (67%) and 1143 females (38%). The age distribution analysis showed 978 patients (567 males and 411 females) i.e. 32.5% in the first decade, 217 (147 males and 70 females) i.e. 7.2% in the second decade, 631 (473 males and 158 females) i.e. 21% in the third decade, 497 (274 males and 223 females) i.e. 16.5% in the fourth decade and 685 (400 males and 285 females) i.e. 22.8% over 40 years.

The majority of patients in this study, 1444 (48%), had suffered their head injury in a fall from a height. Road traffic accidents accounted for 1143 (38%) while 301 (10%) were injured in inter-personal violence. Figure

Our management protocols allow for patients with minor head injuries (Glasgow Coma Score[3] 15-13) to be discharged to the care of a responsible attendant after a period of observation and a CT scan if indicated e.g. in children or if there is vomiting or confusion. Patients with moderate head injuries (Glasgow Coma Score 12-9) may be detained in the emergency room for a period of observation or admitted along with those with severe head injury (Glasgow Coma Score 8-3). This separation yielded 2254 patients who were discharged directly from the emergency room after a period of observation ranging from 1 to 20 hours, while 623 patients (21%) were admitted for inpatient treatment in the neurosurgical unit of the Centre. One hundred and thirty one patients (4%) left hospital against medical advice.

The sex distribution of the patients with head injuries significant enough to require hospitalization was predominantly male (69%) while the age distribution of these patients was weighted towards an older age group with 70% being above the age of 20 years. The largest proportion (34%) was in the economically active 4th decade of life. The cause of head injury in admitted patients was far more often due to road traffic injury (54%) and falls were less frequent (26%) compared to the total series (Figure). Twenty-five patients required to have further treatment for associated injuries and once stable after head injury management were transferred to the appropriate service (orthopaedic, thoracic surgery and maxillo-facial surgery).

Following hospitalization, 180 patients received neurosurgical intervention for compound depressed skull fractures or intracranial heamatomas. The majority of patients (67%) were however managed non-operatively with measures to control raised intracranial pressure. One hundred and fifty four patients died for a mortality rate of

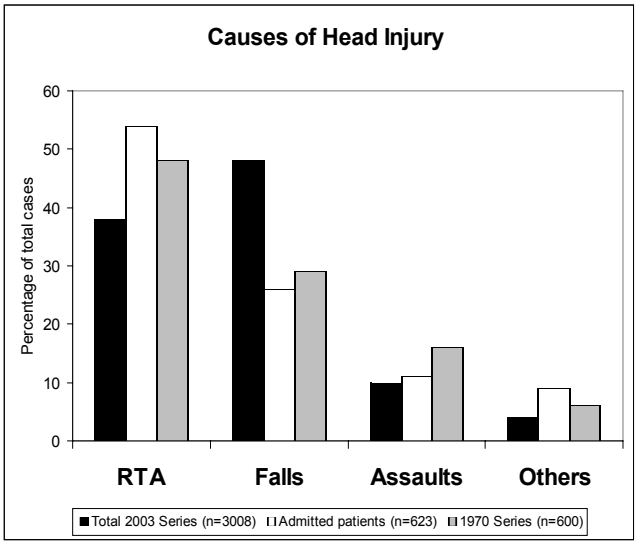

Figure. Causes of Health Injury in 2003 (Total and Admitted patients) and 1970 Series.

5% in the entire series of 3008 patients and 25% of the 623 admitted patients.

Discussion

The progression in Pakistan, as in the rest of the developing world, towards urbanization and greater motorisation is greatly increasing the burden of head injuries.[4] JPMC is one of the 3 major trauma-receiving centres in Karachi and over the years has seen a continuous expansion in the numbers of head injuries received.

A project to study the epidemiology of acute head injuries in Karachi with late Prof O.V. Jooma as principal investigator and supported by the PL 480 programme had been conducted in the Neurosurgery Department of JPMC three decades ago. The unpublished results of this study of head injuries reporting to JPMC in the year 1970 were accessed from our archives and compared with those of the contemporary survey. The survey of acute head injuries reporting to JPMC in 1970 disclosed 83% males and 17% females. The cause of head injury was a traffic accident in 289 (48%) and fall from a height in 178 (29%). Of those injured in accidents, 118 were pedestrians (66 adults and 52 children) while a further 45 patients had fallen from moving vehicles. Of the injuries due to a fall, 166 were at home and these were largely in children while 12 were at work. There were 90 deaths in this group of 600 head injuries for a mortality rate of 15% with traffic accident accounting for 64 (71%) of the fatalities.

The survey of head injury cases received conducted at the Centre during 1970 reported 600 cases for the calendar year compared to 3008 cases for the year 2003. This is a major increase in incidence and even allowing for the fact that the 1970 survey may be under-reporting by excluding minor head injuries discharged from the Emergency

Department, we believe the results reflect a significant change due to population expansion, congested living conditions and enhanced vehicular traffic. The study or Hyder et al[5] covering the period 1948 to 1996 has shown a clear relationship between increasing levels of motorization in Pakistan and the number of fatal accidents. They suggest that the problem of road traffic crashes will only get worse.

The two major causes of head injuries reporting to our Centre are falls and traffic accidents. However, when only cases presenting with significant head injuries are considered, those injured in traffic accidents predominate. These accidents are of great social and economic impact, as those killed or disabled by them were frequently the breadwinner of a family that has to cope with the loss of family income apart from the emotional trauma. The survey results of the Acute Head Injuries Project from our Department in 1970 has demonstrated that the most vulnerable users of our roads are those of low socio-economic status, with 56% of those injured on the roads being pedestrians or victims of falls from moving vehicles, usually buses. A third of the pedestrians had been knocked down by commercial vehicles. More recent data from the country suggests that while commercial vehicles represent only 12% of the total number of registered vehicles, they are involved in over 60% of motor vehicle crashes and up to 90% of the fatalities.[5]

The motor vehicle crash fatality rate in Karachi has been estimated at 11.3/10,000 registered vehicles compared to 1.4 deaths in Tokyo and 2.8 deaths in Manchester for the same number of vehicles.[6] Increasingly traffic injuries are being viewed as a possible health problem for which prevention strategies can be developed and effectively applied.[7] Adherence to traffic regulations, wearing of seat belt and motorcycle helmets have all proven to be effective in road traffic injury prevention.[8] However, a fatalistic approach to the problem and a lack of the political and societal responsibility needed to bring into operation the requisite multi-sectorial collaboration impedes the implementation of road safety programs. Often in the developing countries, infrastructure investment in the transport sector is largely allocated to construction and maintenance of roads and highways used mostly by private transport while overlooking the public transport needs of the poor and Karachi's long-delayed mass transit scheme is a case in point.

Accidental injuries are the leading cause of death in the world for those aged 14 to 44 years and of all these injuries, road traffic fatalities are responsible for a quarter (an estimated 1.26 million in 2000).[9] It has been suggested by the World Health Organization (WHO) that by 2020, injuries on the road could rank third among causes of death and disability, ahead of Malaria, TB and AIDS. In response to the looming public health crisis, the WHO has for 2004 devoted its World Health Day to road safety with the slogan "Road Safety Is No Accident".[10] The experience of head injuries reporting to our Centre in two calendar years, 33 years apart, suggests that this attention to the crisis of death and disability occurring on roads is necessary.

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